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*The Diabetes Educator* 2007 33: 309  
DOI: 10.1177/0145721707299266

The online version of this article can be found at:  
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# Further Evaluating the Acceptability of Group Visits in an Uninsured or Inadequately Insured Patient Population With Uncontrolled Type 2 Diabetes

## Purpose

The purpose of the study was to evaluate perceptions of care delivered through group visits to disadvantaged patients with type 2 diabetes.

## Methods

One hundred eighty-six patients with uncontrolled type 2 diabetes were randomly assigned to receive care in group visits or usual care for 12 months. Their perceptions of the care they received were measured at baseline and 6 and 12 months by the Primary Care Assessment Tool (PCAT), the Diabetes-Specific Locus of Control (DLC) survey, and the Trust in Physician Scale (TPS).

## Results

Compared to patients in usual care, group visit patients' PCAT scores were higher in the domains of ongoing care ( $P = .001$ ), community orientation ( $P < .0001$ ), and cultural competence ( $P = .022$ ). In addition, group patients had higher scores for the Powerful-Other Health Professional subscale of the DLC survey ( $P = .010$ ).

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*Acknowledgments:* This project was supported by grant 5 P01 HSten871 from the Agency for Healthcare Research and Quality, a grant from The Robert Wood Johnson Foundation, Princeton, New Jersey, and 1R21NS043569 from the National Institutes of Health/National Institute of Neurological Disorders and Stroke.

DOI: 10.1177/0145721707299266

## Conclusions

Patients assigned to group visits had generally more positive perceptions about their care in the areas of ongoing care, community orientation of care, and cultural competence of care than did those in usual care. The perception that one's health professional is powerful, however, has been associated with a reluctance of patients to make medication changes on their own in previous studies. These findings suggest the need for modification in the way that group visits are conducted to empower and activate patients while still delivering continuous, culturally competent, and community-oriented care.

As medical costs and the demand for primary care continue to rise, group visits, or shared medical appointments, are increasingly considered alternatives to the traditional patient-physician dyad method of health care delivery. Allowing for an increase in frequency and duration of patient encounters, the group visit provides another option for the delivery of primary care to patients with type 2 diabetes.

In previous studies, patients attending group visits had a reduction in their use of health care services with similar<sup>1</sup> or lower overall costs,<sup>2,3</sup> higher levels of satisfaction,<sup>1-4</sup> and greater trust in their provider.<sup>4</sup> In addition, in the authors' own studies, patients with type 2 diabetes attending group visits had greater adherence to American Diabetes Association (ADA) standards of care (D. E. Clancy et al, unpublished data).<sup>4</sup> Results are mixed, however, for improvement in clinical outcomes, with one study demonstrating sustained improvement in clinical outcomes,<sup>5</sup> while another showed no improvement in clinical outcomes.<sup>4</sup> Thus, research to date indicates that group visits are at least equivalent in clinical outcomes to usual care but at lower costs.

The primary purpose in conducting this study was to evaluate another dimension important in the overall evaluation of group visits: patients' perceptions of their care. This goes beyond patient satisfaction to a more extensive assessment of how patients evaluate their overall care in specific primary care domains such as ongoing care, coordination of services, comprehensiveness of care, cultural competency of care delivered, community orientation, and diabetes-specific loci of control. To assess

these domains, all participating patients completed surveys at baseline and every 6 months until the study end.

## Objectives and Outcomes

In this study, it was hypothesized that delivering care in group visits would prove acceptable for disadvantaged patients with uncontrolled type 2 diabetes. Patient outcomes monitored were perception of characteristics and quality of care (as measured by responses to the Primary Care Assessment Tool [PCAT], a well-validated tool developed by Shi et al<sup>6</sup> for the evaluation of patient perception of primary care in underserved populations), locus of control (as measured by the Diabetes-Specific Locus of Control Survey [DLC]),<sup>7</sup> trust in the health care provider,<sup>8</sup> and patients' attendance to group visits.

## Research Design and Methods

### Study Population

This study took place at the Adult Primary Care Center (APCC) at the Medical University of South Carolina, a clinic that serves approximately 6000 uninsured or inadequately insured patients in the Charleston, South Carolina, area. Most of the patients (62%) are African American, 36% live outside an area accessible by public transportation, and many are residents of the surrounding rural areas. Approximately 65% of the patients are female. Diabetes is the second most common diagnosis for which patients at the APCC are seen (following hypertension). Ten academic internal medicine faculty physicians (for a total of 4 full-time equivalents) supervise residents, nurse practitioners, physician assistants, and other students and serve this largely minority patient population.

Eligible patients aged  $\geq 18$  years with a diagnosis of type 2 diabetes and an HbA1c level  $\geq 8.0\%$  (a pool of more than 2000 patients) were identified through a query of the APCC electronic medical record. Exclusion criteria included primary diagnosis of substance abuse or dependence, current pregnancy, dementia, inability to hear, inability to speak English, or lack of transportation to the clinic. Identified patients were invited to participate through telephone or on-site solicitation. This was accomplished with a standardized script that was presented to the patients by 1 of 5 consistent interviewers. For both intervention and control patients, modest compensation was provided for time and transportation

whenever the patients came in for baseline, 6-month, and 12-month study data collection. These data collection visits were separate from any patient health care visits. Research assistants assisting with survey completion were blind to randomization assignment.

### Randomization and Blinding

Patients providing written, informed consent were randomly assigned to the intervention group (group visits) or the control group (usual care). A program developed by the University of Texas System Cancer Center (Randlst), which allows for stratification and blocking, was used for randomization (<http://odin.mdacc.tmc.edu/anonftp/>). Block randomization with a block size of 4 was used to ensure balance in the numbers of patients randomized to the 2 conditions. Assignment notification was accomplished through the patients' opening of sealed envelopes after giving written consent and collecting baseline data. After the patients received their assignments, they advised the study administrator, who recorded their assignments in a log. The intervention patients were then able to schedule themselves into the group visit schedule that was most convenient for them.

### Procedure

All patients enrolled in the study, intervention and control, received reminder cards and telephone calls for their appointments, as is the usual procedure for the APCC. They also received letters and telephone calls to schedule the data collection appointments. At baseline and within a 6-week period at 6 months and 12 months postrandomization, the intervention and control groups completed surveys that included the PCAT,<sup>6,9</sup> the DLC questionnaire,<sup>7</sup> and the Trust in Physician Scale (TPS).<sup>8</sup> The PCAT is a well-validated tool developed by Shi et al.<sup>6,9</sup> for evaluation of patient satisfaction in underserved populations. The DLC is an 18-item, 5-domain survey scored on a 6-point Likert-type scale, with reverse scoring as needed, evaluating diabetic patients' sense of control over their illness.<sup>7</sup> The domains assessed include internal locus of control–autonomy, internal locus of control–blame, chance locus of control, powerful other locus of control–health professional, and powerful other locus of control–nonmedical. The TPS is a validated scale evaluating patients' perceptions of their physicians' dependability (looking out for the patient's best interest), confidence in their physicians' knowledge and skills, and

trust in the reliability of the information given to the patient.<sup>8</sup>

### Intervention

Group visits, co-led by 1 of 6 primary care internal medicine physicians and 1 of 3 registered nurses in the clinic, were modeled after the Cooperative Health Care Clinics (CHCC) developed by Beck et al.<sup>2</sup> After reviewing pertinent literature and the CHCC orientation manual, participating physicians and nurses received on-site training by a senior internist who previously conducted group visit training. The previous coordinator for CHCC who trained early CHCC providers conducted a 3-hour educational session for clinic staff members participating in group visits.

After provider training and baseline data collection, patients randomized to group visits were divided into 6 groups that met monthly for 12 months, each consisting of 14 to 17 patients. Group visits, meant to be the patients' main source of primary medical care, occurred in the same building but on a different floor from the clinic. Group visit scheduling allowed for 2 hours: 10 to 15 minutes for warm up and socialization, 30 to 45 minutes for an interactive discussion of a health-related topic, and 60 minutes for one-on-one consultations with the physician. While vaccinations and foot examinations are amenable to occurring in the group visits, mammograms and Papanicolaou tests require separate scheduling. In addition, patients scheduled appointments between group visits for specific medical needs not amenable to a group visit (eg, abdominal examinations, electrocardiograms). Group visit content, guided by the patients, was directed by the physicians to cover educational topics included in the core curriculum developed by Sadur et al,<sup>1</sup> such as nutrition, exercise, foot care, medications, complications of diabetes, and the emotional aspects of diabetes.

### Usual Care

Patients randomized to usual care received care in the clinic as usual, seeing faculty or resident physicians, medical or physician assistant students, and physician assistants or nurse practitioners with available referrals to a diabetes educator or a dietician. Although all APCC providers are knowledgeable about the ADA standards of care for patients with type 2 diabetes and the US Preventive Services Task Force recommendations for cancer screening, barriers exist that prevent optimal care

and screening because of insufficient numbers of providers, staff members, available appointments, and costs to patients.

## Statistical Methods

Baseline patient responses were evaluated for any significant differences between the treatment and control groups for each outcome. The longitudinal model of the outcomes was then studied. For each single outcome, a generalized linear model with correlated repeated measures was used to fit the data. No assumption was imposed to the correlation matrix among longitudinal repeated measures. The comparison between treatment and control was analyzed in 2 different ways to check for any group cluster effect: with each group separate (taking the cluster into account) and with all treatment groups combined. The change of each outcome (measured by the slope) was compared between the treatment group and the control group. SAS GENMOD procedure was used in model fitting.

O'Brien's<sup>10</sup> global statistical test was used to compare treatment effects in each domain of the outcomes jointly. The results from the global statistical test provide information about the treatment effect by testing the overall effects from all the outcomes jointly in the domain. For each patient, the slope of each outcome in the domain was computed. The nonparametric global statistical test was then used to compare the slopes between the treatment and control groups.<sup>10</sup>

One patient assigned to usual care died prior to study onset; thus, her data were eliminated from analysis. Two patients assigned to attend group visits died during the study; however, they continued to attend group visits until just before their deaths but before the last data collection point. Thus, their last observations were carried forward. Of the 27 patients who withdrew (13 in usual care and 14 assigned to groups), all but 1 indicated a reason. Missing survey data for patients indicating that their withdrawal from the study was related to the study or for patients who did not give a reason for their withdrawal were replaced by the worst observations for their respective group for each question. Missing data for those patients whose withdrawal was unrelated to the intervention (received a job outside the area, continued to participate in group visits but did not show for the final data collection) were replaced by the last study observation in the analysis. In the slope computation, any missing value at baseline measure was imputed by the average

observed value for that outcome at baseline. For the PCAT, any missing data were replaced by "2.5" as per the authors' instructions.

## Results

Of 506 patients contacted by telephone or on site during a 24-week period from September 2002 to February 2003, 186 with a last charted HbA1c level of  $\geq 8.0\%$  agreed to participate. Using the procedures specified above, 96 patients were randomized to attend group visits, and 90 patients were randomized to continue with usual care. Patients' demographics, as shown in Table 1, were well balanced at baseline.

The average age of the patients was 56.1 years (range, 26.5-80.7). As is typical of APCC patients, 72% were female, 82.8% were African American, and 34.2% reported being currently married. The mean self-reported educational level for these patients was 10.6 years, but the average health literacy level, as assessed through the use of the Rapid Estimate of Adult Literacy Tool,<sup>11</sup> was sixth grade. Eight percent of the patients had commercial insurance, 20% had Medicaid, 38% had Medicare, and 28% had no insurance; 26% of the patients reported working either full- or part-time.

While there were no significant differences between treatment and control patients at baseline, comparison of the slopes between the intervention and usual care patients demonstrated significant improvements in several areas. Patients attending group visits exhibited significant improvement in the PCAT domains of cultural competency and community orientation as compared to usual care patients ( $P = .022$  and  $< .001$ , respectively). In addition, their perceptions of the continuity of their care, as measured by the PCAT domain ongoing care, were significantly improved among patients randomized to the intervention ( $P = .001$ ).

Of the 5 domains measured in the DLC survey, the responses of patients attending group visits indicated that they perceived the health professional to be a powerful other locus of control ( $P = .010$ ). Significant differences were not found among any other outcomes. In addition, patients' responses to the TPS were not significantly different between patients in group visits and those in usual care before or after the intervention. This is in contrast to the previous study, in which patients in group visits exhibited greater trust toward their physician in group visits than in usual care.

Table 1

## Demographics

Characteristic	Descriptive Measure
Mean age, y	56.1
Male gender, n (%)	52 (28)
Race, n (%)*	
African American	155 (83)
Caucasian	31 (17)
Marital status	
Single	58 (31)
Married	62 (33)
Divorced	20 (11)
Separated	19 (10)
Widowed	27 (15)
Educational/health literacy level	
Years of education completed	10
REALM literacy level	6
Insurance type, n (%)	
Private	15 (8)
Medicare	37 (20)
Medicaid	70 (38)
Uninsured	53 (28)
Other	11 (6)
Employment status, n (%)	
Full-time	31 (17)
Part-time	17 (9)
Retired	29 (16)
Unemployed	9 (58)

REALM = Rapid Estimate of Adult Literacy.  
\*Patients represented only African Americans and Caucasians, with no other races represented in the study population.

Attendance at group visits ranged from a low of 62% to a high of 79%, with a mean of 70.5% (see Table 2). Although attendance rates for nongroup visits were unable to be documented, in general, the attendance rates for the APCC have remained stable at 60% to 70% over the past 10 years.

Table 2

## Attendance Rate

Group	%
1	62
2	63
3	65
4	72
5	78
6	79
Overall	70.46

## Discussion

In the authors' initial study of group visits for disadvantaged patients with uncontrolled type 2 diabetes, they reported that the perceptions of the patients attending group visits could "only be described as 'trending' in favor of the group patients for (the PCAT domains of) coordination of care, community orientation, and cultural competence."<sup>4</sup> The authors hypothesized that those trends might have been related to or responsible for the higher trust levels of patients attending group visits. This larger study, however, refutes that hypothesis. With 6 participating providers instead of 1, the domains of community orientation and cultural competency are significantly in favor of group visits, but there were no differences between the patient groups regarding their trust in their providers.

The improvement in the domain of community orientation in patients attending group visits compared to usual care is not surprising. With longer and more frequent interactions between the patients and their providers, one would expect over time that the provider would become more knowledgeable about the community from which his or her patients came and that this would be reflected in their patients' ratings. It is intriguing, however, that this finding was so strong after a maximum of 12 months. Perhaps the increased amount of face time with providers (2 to 2½ hours per month compared to 20-30 minutes every 3 months) in a more relaxed setting with other patients having similar medical and social situations



gives the provider greater insight into all patients' communities.

The improvement in the cultural competency domain of group visit patients compared to usual care is an interesting and unexpected finding; however, it fits with the finding of improved community orientation. Most patients in this study were African American, while all of the physicians were white except for 1 black physician from Nigeria. It is likely that this finding of improved community orientation is a result of the patients' getting to know their providers better over an extended period of time and of having families in attendance to listen to the group discussion.

The improvement in the patients' assessment of their ongoing care is not unexpected. In the APCC, a clinic that serves uninsured and inadequately insured patients, there has historically been a lack of continuity available to the patients. The continuity afforded to patients attending group visits, with the same physician and same nurse leading their group each month, likely accounts for this finding.

The fact that patients attending group visits had higher scores on the powerful other–health professional domain of the DLC has implications for the lack of significant clinical outcomes and future directions. High scores in this domain have been associated with negative outcomes such as infrequent insulin dose adjustment and lower diabetes knowledge.<sup>7</sup> Informal questioning of patients suggests that they may be unaware they could adjust their own insulin dosage. While the original authors of the DLC perceived a high score to be a negative, for these patients not usually afforded continuity of care, this finding may actually reflect a higher degree of confidence in their provider; thus, a 12-month trial may not be long enough to adequately assess this domain. This finding does suggest that those who provide group visits may need to be thoughtful about how best to go forward such that group visit patients have trust in their providers, improved knowledge in diabetes, and a stronger sense of empowerment.

Group visits were found to be acceptable to the intervention patients, as is evidenced by their attendance rates remaining at least as good as those of the general clinic population. Although it was not possible to document the attendance rates of the control patients, the general clinic population attendance rate has been stable over the

past 8 years at 60% to 70% and essentially mirrored the attendance rates of the patients who attended group visits. Moreover, it should be noted that almost equal numbers of patients in the usual care and intervention conditions withdrew from the study, implying that the intervention patients were at least as satisfied with the group visits as the patients in the general clinic population. In addition, the physicians who participated in the study and who remain at the clinic are continuing to conduct their group visits, an informal indication of acceptability from the clinicians' viewpoint.

In this study, patients with uncontrolled type 2 diabetes found group visits to be community oriented and culturally competent, and they exhibited satisfaction with the ongoing care delivered. The clinical challenge is to maintain these positive findings while making modifications to the group visit format to improve clinical outcomes.

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